

What is claimed is:

[c1] A method of making a polypropylene product comprising the steps of:

(a) providing an extrusion grade mini-random polypropylene;

(b) combining said extrusion grade polypropylene with a non-particulate nucleation system, to form a composition;

(c) processing said composition into said product; and

wherein the concentration of nucleating system is from 25 ppm to 300 ppm.

[c2] The method of claim [c1] wherein said product is a biaxially oriented film.

[c3] The method of claim [c2] wherein the concentration of non-particulate nucleating system is from 50 ppm to 200 ppm.

[c4] The method of claim [c2] wherein the concentration of non-particulate nucleating system is from 100 ppm to 200 ppm.

[c5] The method of [c1] wherein the non-particulate nucleating system consists essentially of one or more aliphatic dicarboxylic acids.

[c6] The method of claim [c5] wherein the aliphatic dicarboxylic acids are selected from the group consisting of succinic acid, glutaric acid, adipic acid, pimelic acid, suberic acid, azelaic acid, undecanedioic acid and dodecanedioic acid.

[c7] The method of claim [c1] wherein the non-particulate nucleating system consists essentially of at least one aliphatic dicarboxylic acid containing from 4 to 21 carbon atoms and at least one aliphatic monocarboxylic acid

containing from 8 to 24 carbon atoms in a weight ratio between 4:1 and 1:4.

- [c8] The method of claim [c7] wherein the aliphatic monocarboxylic acids are selected from the group consisting of oleic acid, stearic acid, behenic acid, myristic acid, pentadecanoic acid, palmitic acid, margaric acid, abietic acid, lauric acid, linoleic acid, ricinoleic acid, dihydroxystearic acid, arachidic acid, eicosenoic acid, erucic acid, tetracosenoic acid, elaidic acid and mixtures thereof.
- [c9] The method of claim [c7] wherein the aliphatic monocarboxylic acids consists of a mixture of stearic acid, palmitic acid, myristic acid, margaric acid, pentadecanoic acid and oleic acid.
- [c10] The method of claim [c7] wherein the aliphatic dicarboxylic acids are selected from the group consisting of succinic acid, glutaric acid, adipic acid, pimelic acid, suberic acid, azelaic acid, undecanedioic acid and dodecanedioic acid.
- [c11] The method of claim [c7] wherein the monocarboxylic acid is stearic acid and the dicarboxylic acid is adipic acid.
- [c12] The method of claim [c7] wherein the dicarboxylic acid is adipic acid and the monocarboxylic acid is a mixture of stearic acid, palmitic acid, myristic acid, margaric acid, pentadecanoic acid and oleic acid.
- [c13] The method of claim [c1] wherein said product is a plurality of pellets.
- [c14] The method of claim [c1] wherein said product is a powder.
- [c15] The method of claim [c2] further comprising the step of processing said composition into a biaxially oriented film by stretching said film in the machine direction and separately stretching said film layer in the transverse direction to produce a biaxially-oriented film.

[c16] The method of claim [c2] further comprising the step of processing said composition into a biaxially oriented film by simultaneously stretching said film in the machine direction and in the transverse direction to produce a biaxially-oriented film.

[c17] A method of making a biaxially oriented polypropylene film comprising the steps of:

(a) providing an extrusion grade mini-random polypropylene;

(b) combining said extrusion grade polypropylene with a non-particulate nucleation system, to form a composition;

(c) processing said composition into a biaxially oriented film; and

wherein the concentration of nucleating system is from 25 ppm to 300 ppm.

[c18] The method of claim [c17] wherein the concentration of non-particulate nucleating system is from 50 ppm to 200 ppm.

[c19] The method of claim [c17] wherein the concentration of non-particulate nucleating system is from 100 ppm to 200 ppm.

[c20] The method of claim [c17] wherein the non-particulate nucleating system consists essentially of aliphatic dicarboxylic acids.

[c21] The method of claim [c20] wherein the aliphatic dicarboxylic acids are selected from the group consisting of succinic acid, glutaric acid, adipic acid, pimelic acid, suberic acid, azelaic acid, undecanedioic acid and dodecanedioic acid.

[c22] The method of claim [c17] wherein the non-particulate nucleating system

consists essentially of at least one aliphatic dicarboxylic acid containing from 4 to 21 carbon atoms and at least one aliphatic monocarboxylic acid containing from 8 to 24 carbon atoms in a weight ratio between 4:1 and 1:4.

[c23] The method of claim [c22] wherein the aliphatic monocarboxylic acid is selected from the group consisting of oleic acid, stearic acid, behenic acid, myristic acid, pentadecanoic acid, palmitic acid, margaric acid, abietic acid, lauric acid, linoleic acid, ricinoleic acid, dihydroxystearic acid, arachidic acid, eicosenoic acid, erucic acid, tetracosenoic acid, elaidic acid and mixtures thereof.

[c24] The method of claim [c22] wherein the aliphatic monocarboxylic acids consists of a mixture of stearic acid, palmitic acid, myristic acid, margaric acid, pentadecanoic acid and oleic acid.

[c25] The method of claim [c22] wherein the dicarboxylic acid is selected from the group consisting of succinic acid, glutaric acid, adipic acid, pimelic acid, suberic acid, azelaic acid, undecanedioic acid and dodecanedioic acid.

[c26] The method of claim [c22] wherein the monocarboxylic acid is stearic acid and the dicarboxylic acid is adipic acid.

[c27] The method of claim [c22] wherein the dicarboxylic acid is adipic acid and the monocarboxylic acid is a mixture of stearic acid, palmitic acid, myristic acid, margaric acid, pentadecanoic acid and oleic acid.

[c28] A method of making a biaxially oriented polypropylene film comprising the steps of:

(a) providing an extrusion grade mini-random polypropylene;

(b) combining said extrusion grade polypropylene with a non-particulate

nucleation system, to form a composition;

(c) processing said composition into a biaxially oriented film; and

wherein the concentration of non-particulate nucleating system is from 25 ppm to 300 ppm and wherein the nucleating system consists essentially of at least one aliphatic dicarboxylic acid containing from 4 to 21 carbon atoms and at least one aliphatic monocarboxylic acid containing from 8 to 24 carbon atoms in a weight ratio between 4:1 and 1:4.

[c29] The method of claim [c28] wherein the monocarboxylic acid is stearic acid and the dicarboxylic acid is adipic acid.

[c30] The method of claim [c28] wherein the dicarboxylic acid is adipic acid and the monocarboxylic acid is a mixture of stearic acid, palmitic acid, myristic acid, margaric acid, pentadecanoic acid and oleic acid.

[c31] The method of claim [c28] wherein the concentration of nucleating system is from 50 ppm to 200 ppm.

[c32] The method of claim [c28] wherein the concentration of nucleating system is from 100 ppm to 200 ppm.

[c33] A method of making a polypropylene composition useful in the manufacture of biaxially oriented polypropylene film comprising the steps of:

(a) providing an extrusion grade mini-random polypropylene;

(b) combining said extrusion grade polypropylene with a non-particulate nucleation system, to form a composition;

(c) processing said composition into a convenient raw material; and

wherein the concentration of non-particulate nucleating system is from 25 ppm to 300 ppm and wherein the nucleating system consists essentially of at least one aliphatic dicarboxylic acid containing from 4 to 21 carbon atoms and at least one aliphatic monocarboxylic acid containing from 8 to 24 carbon atoms in a weight ratio between 4:1 and 1:4.

[c34] The method of claim [c33] wherein the extrusion grade polypropylene and non-particulate nucleation system is further combined with an antioxidant in the amount less than 1% and an acid neutralizer in the amount of less than 1%.

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